

FIG. 1

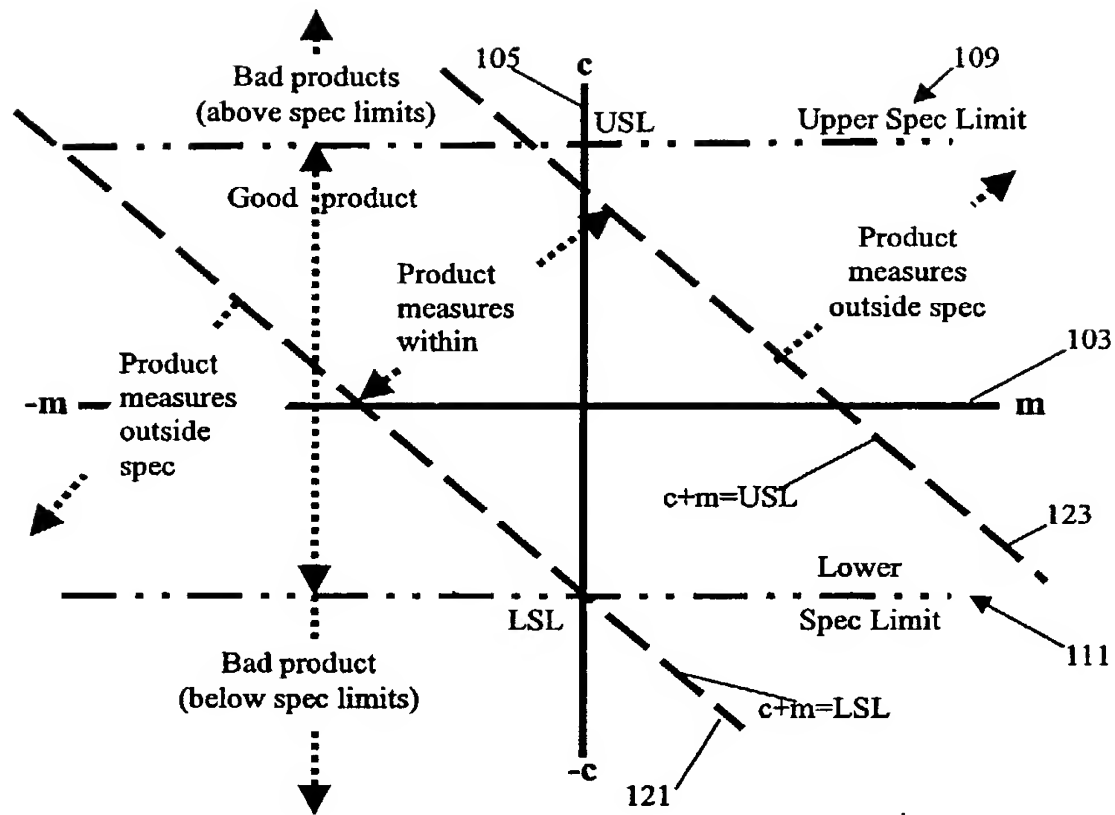


FIG. 2

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Inspection Outcome	Probability of Outcome
1) product within its specification limit accepted	p_1
2) product outside its specification is rejected	p_2
3) product within its specification is rejected	p_3
4) product outside its specification is accepted	p_4

Table 1. Inspection outcome probabilities

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Event	Unit cost per Event	Probability of Event	Cost per unit product
Product Inspection	CI	1	CI
Product Scrap/Rework	CR	p_2+p_3	$(p_2+p_3)*CR$
Escaping Defect	CE	p_4	p_4*CE
Unnecessary rework		p_3	p_3*CR

Table 2. Costs and weighted contributions

FIG. 4

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601	First Inspection Outcome	Probability of Outcome
	11) product within its specification limit accepted	p11
	12) product outside its specification is rejected	p12
	13) product within its specification is rejected	p13
	14) product outside its specification is accepted	p14
611	Second Inspection Outcome	
	21) product within its specification limit accepted	p21
	22) product outside its specification is rejected	p22
	23) product within its specification is rejected	p23
	24) product outside its specification is accepted	p24
	Table 3. Inspection outcome probabilities	

FIG. 6

A Method and System for Assessing the Quality and Cost of Inspection

701

Event	Unit cost per Event	Probability of Event	Cost per unit product
First Product Inspection	CI1	1	CI1
Second Product Inspection	CI2	p12+p13	(p12+p13)*CI2
Product Scrap/Rework	CR	p22+p23	(p22+p23)*CR
Escaping Defect	CE	p14+p24	(p14*p24)*CE
Unnecessary rework		p23	p23*CR
Table 4. Costs and weighted contributions			

FIG. 7

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Process standard dev		0.0010	inches
Process center		10.0000	inches
Lower specification limit (LSL)		9.9970	inches
Upper specification limit (USL)		10.0030	inches
Calculated specification center		10.0000	
Lower inspection limit (LIL)		9.9985	inches
Upper inspection limit (UIL)		10.0015	inches
Calculated inspection center		10.0000	
Inspection bias		0.0000	inches
Enter std dev or gage R&R	Gage noise std dev		inches
	% Gage R&R	40	percent

FIG. 8

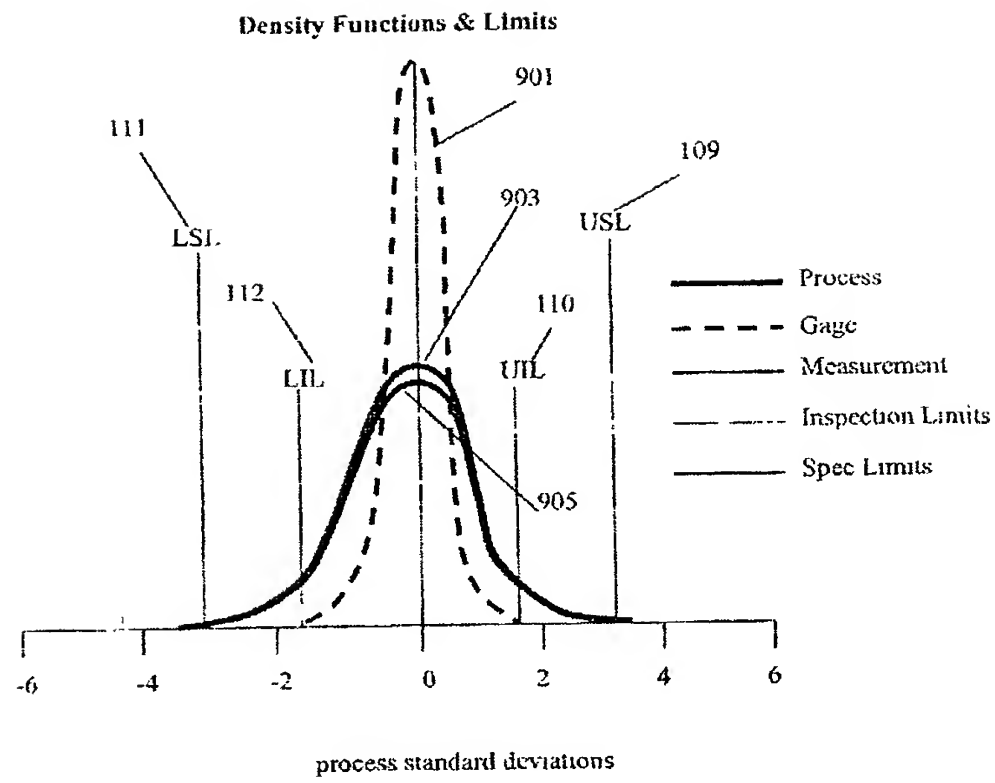


FIG. 9

1001

Inspected product judged against product spec limits (PPM)	
good product accepted	826047
good product rejected	171254
bad product accepted – escapes	1
bad product rejected	2699

FIG. 10

Density Functions & Limits

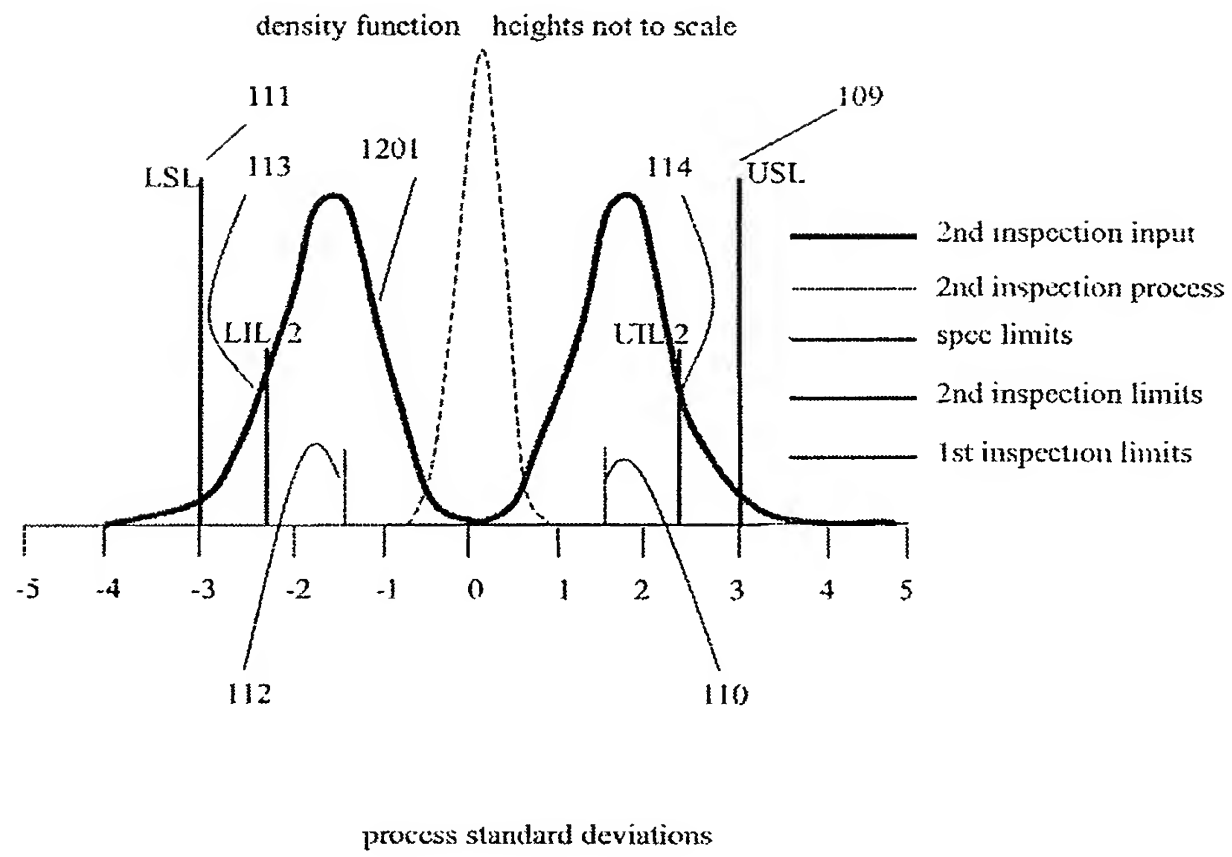


FIG. 12

1301

Reinspected product judged against spec limits (PPM)	
good parts accepted	149850
good parts rejected	21404
bad parts accepted -- escapes	1
bad parts rejected	2699

FIG. 13

1401

	Cost per part	probability of occurrence	
		inspect once	inspect twice
make	10.00	1.000000	1.000000
first inspection	1.00	1.000000	1.000000
second inspection	3.00	0.000000	0.173953
scrap/rework	6.00	0.173953	0.024102
escape	1000.00	0.000001	0.000001
Total Costs			
		inspect once	inspect twice
make	10.00	10.00	
first inspection	1.00	1.00	
second inspection	0.00	0.52	
scrap/rework	1.04	0.14	
escape	0.00	0.00	
TOTAL	12.04	11.67	

FIG. 14

1501

Total Costs		
	inspect once	inspect twice
make	10.00	10.00
first inspection	1.00	1.00
second inspection	0.00	0.35
scrap/rework	0.71	0.14
escape	0.00	0.00
TOTAL	11.71	11.50

FIG. 15